

REMARKS

1. In the above-captioned Office Action, the Examiner rejected claims 1-5, 7, 8, 10-12, and 14-18 under 35 U.S.C. §102(e) in view of Itoyama et al. (U.S. Patent Application Publication No. 2002/0173898 A1). Claims 9, 13 and 20 were rejected under 35 U.S.C. §103(a) in view of Itoyama. Claims 6 and 19 were rejected under 35 U.S.C. §103(a) given Itoyama in view of Schmidt (Article titled "Detection of Cavitation In Fuel Nozzles"). These rejections are traversed and reconsideration is hereby respectfully requested.

2. Claims 1-5, 7, 8, 10-12, and 14-18 were rejected under 35 U.S.C. §102(e) given Itoyama. Claims 9, 13 and 20 were rejected under 35 U.S.C. §103(a) in view of Itoyama. Claims 6 and 19 were rejected under 35 U.S.C. §103(a) given Itoyama in view of Schmidt.

The Examiner cites orifice 27 from the fuel passage 24 of FIG. 2 of Itoyama, stating that the orifice is disposed in the nozzle. As shown in FIG. 2, the nozzle is at the bottom of the fuel injector and the orifice is at the top of the fuel injector. Thus, the orifice is not disposed in the nozzle, and Itoyama fails to teach *an orifice disposed in the nozzle*, as set forth in independent claim 1, nor *communicating fluid to a pressure sensor through a first orifice disposed in the nozzle*, as set forth in independent claim 14.

As stated in Itoyama:

Signals corresponding to detection values are input to the control unit 41 from a pressure sensor 32 which detects a fuel pressure of the pressure accumulating chamber 16A ... [Page 5, paragraph 114, lines 1-4].

As shown in FIG. 2, Itoyama's fuel pressure sensor 32 is disposed in and measures fuel pressure in a pressure accumulating chamber 16A. Itoyama's pressure sensor is not adjacent to the orifice, which is found further downstream in the fuel system in Itoyama's fuel injector. Thus, Itoyama fails to teach *a pressure sensor adjacent to the orifice*, as set forth in independent claim 1. Further, because Itoyama's pressure sensor is located in the accumulator 16A, and not in or near a discharge port in a nozzle of a fuel injector, Itoyama fails to teach *measuring fluid pressure near the at least one discharge port with the pressure sensor*, as set forth in independent claim 14, and *a pressure sensor arranged to measure pressure in the*

fluid cavity, as set forth in independent claim 10. One of ordinary skill in the art would recognize the difference in pressure measurements between an accumulator and a discharge port in a nozzle of a fuel injector as shown in Itoyama's FIG. 2.

Because independent claims 1, 10, and 14 were rejected under 35 U.S.C. §102(e) in view of Itoyama, and as shown above Itoyama fails to teach at least one element of each of these independent claims, a 35 U.S.C. §102(e) rejection of independent claims 1, 10, and 14 cannot be sustained in view of Itoyama.

Hence, the applicant respectfully submits that claims 1, 10, and 14 may be passed to allowance.

With respect to dependent claims 9, 13, and 20, the Examiner states that it would have been obvious to one of ordinary skill in the art to use any known piezoelectric quartz transducer to sense pressure in the fuel line. Even if the claims of the present invention claimed "sensing pressure in the fuel line," one of ordinary skill in the art, given the present application, would realize that "any known" piezoelectric quartz transducer would not be utilizable as a pressure sensor as set forth in the present claims for a number of reasons. For example, there are known piezoelectric quartz transducers that are 1) too big to fit in the nozzle area of a fuel injector; 2) unable to make pressure measurements in the appropriate range; and/or 3) unable to be disposed in a fuel environment. Thus, dependent claims 9, 13, and 20 are not obvious in view of Itoyama and/or the Examiner's assertion regarding piezoelectric quartz transducers.

With respect to dependent claims 11 and 12, for the reasons set forth above, the orifice 27 of Itoyama is not disposed along an outer boundary of the fluid cavity, nor in the needle, nor is the pressure sensor disposed in the orifice.

Furthermore, claims 2-9, 11-13 and 15-20 are dependent upon an independent claim that is shown to be allowable. For all these reasons, the dependent claims are themselves allowable.

5. No new subject matter is introduced by the amendments to the above claims. The above change to claim 1 corrects a typographical error.

6. The Examiner is invited to contact the undersigned by telephone or facsimile if the Examiner believes that such a communication may advance the prosecution of the present application. Notice of allowance of claims 1-20 is hereby respectfully requested.

Respectfully submitted,

Date: November 29, 2004

By:

Susan L. Lukasik

Susan L. Lukasik
Registration No. 35,261
Attorney for Applicant
International Engine Intellectual Property
Company, LLC
Voice: (630) 753-2172
Fax: (630) 753-3982